

Title: Let's Celebrate!**Brief Overview:**

The third grade students will have an awards banquet. Your help is needed to arrange seating, organize student line-up order, and to design placemats for the banquet. This is a performance activity. We anticipate that the teacher already will have used similar performance assessment activities.

Links to NCTM Standards:

- **Mathematics as Problem Solving**
Students will demonstrate their ability to solve problems in mathematics, including problems with open-ended answers and problems which are solved in a cooperative atmosphere.
- □ **Mathematics as Communication**
Students will demonstrate their ability to communicate mathematically. They will read, write, and discuss mathematics with language and the signs, symbols, and terms of the discipline.
- □ **Mathematics as Reasoning**
Students will demonstrate their ability to reason mathematically. They will make conjectures, gather evidence, and build arguments.
- □ **Mathematical Connections**
Students will demonstrate their ability to connect mathematics topics within the discipline and with other disciplines.
- **Number Sense and Numeration**
Students will demonstrate their ability to describe and apply number relationships using concrete and abstract materials. They will choose appropriate operations and describe effects of operations on numbers.
- **Patterns and Relationships**
Students will demonstrate their ability to recognize numeric and geometric relationships and will generalize a relationship from data.

Grade/Level:

Grade 3

Duration/Length:

This series of lessons will take 2 - 4 class periods of 60 minute duration.

Prerequisite Knowledge:

Students should have working knowledge of or ability to do the following:

- ☐ Use problem solving strategies
- ☐ Copy and reproduce a visual representation
- ☐ Work cooperatively

Objectives:

Students will:

- ☐ observe, copy, continue, describe, and create patterns .
- ☐ work cooperatively in groups.
- ☐ read to perform a task.

Materials/Resources:

- ☐ Student Resource 1
- ☐ Student Resource 2
- Unifix Cubes
- Pattern Blocks / or Teacher Resource 6
- Teacher Resources 1,2,3,4 run on different color paper or color code
- Teacher Resources 5
- Student Resources 3 and 4
- Sentence Strips
- Crayons, markers, or colored pencils

Development/Procedures:**Day 1:**

- Hand out Student Resource 1.
- Students read introduction and Activity 1-A silently. Discuss. Complete 1-A independently. Discuss how they solved the problem.
This shows the power of communication and there are many possible answers.
- ☐ Hand out Student Resource 2.
- ☐ Read 1-B silently. Discuss. Complete independently.

- Hand out Student Resource 3.
Examples of possible patterns are:

girl	girl	boy	girl	girl	boy	girl	girl	boy
red	red	blue	red	red	blue	red	red	blue
circle	circle	triangle	circle	circle	triangle	circle	circle	triangle
A	A	B	A	A	B	A	A	B

The power of taking a pattern and transferring to different mediums allows the teacher to say, “Have you solved a similar problem?” The power of the problem Activity 2 is that students must read, reread, and reflect before they solve the problem.

- ☐ Key 1-A There are multiple solutions. There can be 4, 6, 8, or 10 people at the head table.
- ☐ Key 1-B There are multiple solutions.
Sample solutions: $54 - 10 = 44$ or $54 - 4 = 50$
- ☐ Key - 2-B There are multiple answers. Some are: 25, 26, 29, 30.

Day 2:

- ☐ Arrange students into cooperative groups of four.
- ☐ Give each group a set of four cards (TR 1,2,3,4).
- ☐ Each student will read their own card and use the clue to build a pattern using all clues.
- ☐ Teacher surveys work and gives another set for group to complete.
- ☐ Repeat two more times.
- ☐ Give each group a blank set of cards (TR5) to create a pattern description
- ☐ Students send their set of clues to another group to solve.
- ☐ Reorganize students to work independently.
- ☐ Hand out SR4 and sentence strips .
- ☐ Collect.

Performance Assessment:

Students will be evaluated based on the following criteria:

- ☐ Group participation and performance
- ☐ Written responses on student worksheets
- ☐ Sentence strips

Extension/Follow Up:

- ☐ Students can design patterns on 11x14 construction paper.
- ☐ Pattern sentence strips can be used by the teacher to compare and contrast different patterns.

- ☐ Using a student-created pattern sentence strip as a model instruct students to copy and/or to extend that pattern.
- ☐ Using a student- created pattern strip as a model instruct the students to show the same pattern in a different way.
- Have the students brainstorm to name dances that have a clear pattern. Have music available to do one of the dances, for example, The Alley Cat, The Macarena, The Chicken Dance, The Electric Slide. (This would be a Music Connection.)
- Have the students brainstorm to think about a human resource (job) that would use patterns. Ask, ‘What would that be?’ How would they use patterns?
- Have the students identify and then create a short school spirit or school sport team cheer. Then have them write the pattern.
Example: Go, Hawks, Go! Go, Hawks, Go! Go, Hawks, Go!
 A B A A B A A B A
- ☐ Have a Journal Writing/Critical Thinking Question to go with the cooperative group activity on Day 2 (Clue Cards).

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Student Resource 1

Seating Activity #1-A

The third grade students will have an awards banquet. Your help is needed to arrange seating, organize student line-up order, and to design placemats for the banquet. There will be 3 tables at the banquet. There will be a head table across the front of the room and two other tables. Each of these tables will be made by pushing square tables together. The square tables can only seat one person on each side. There will be 50 students and 4 adults seated at the tables.

If the head table will be made by pushing 4 square tables together in a line, how many people will sit at it? Answer the question in complete sentences. Draw and label your picture to show how you arrived at your answer.

Student Resource 2

Seating Activity #1-B

How many square tables will you put together to form long tables to seat everyone else?

Draw and label your picture to show how you arrived at your answer.

Student Resource 3

Line Up Activity # 2-A

Create a pattern to have the third grade students form a single line to enter the banquet.

Write your pattern on the line. Continue the pattern at least 3 cores.

A core is the smallest sequence (such as blue, blue, red).

Now use Unifix cubes to show your pattern.

Copy your pattern here.

Repeat the pattern using pattern blocks or Teacher Resource 6..

Copy your pattern here.

Use letters to describe your pattern.

Student Resource 4

Line Up Activity #2-B

After dinner the students will line up to receive certificates. The order is music award, music award, physical education award, and art award. This order will continue for the whole award ceremony. There are 23 students already in line. You will be receiving a music award. Where will you join the already formed line? Answer the question in a complete sentence. Show how you solved the problem.

Placemat Activity #3-A

Create a repeating pattern on one side of your sentence strip. On the back, use letters to describe your pattern.

Placemat Activity #3-B

The principal said we may have special placemats printed for the big day. You will design a placemat that has a repeating pattern. Draw your pattern in the placemat on the back of this page.

Teacher Resource #1

<p>Make a repeating pattern.</p>	<p>The second shape has one more side than the first shape.</p>
<p>In one shape, all of the side are not all the same length.</p>	<p>The pattern has two terms.</p>

Teacher Resource # 2

<p>Use more squares than any other shape.</p>	<p>The first block has three edges.</p>
<p>Use three different shapes.</p>	<p>Make a repeating pattern that has four terms.</p>

Teacher Resource #3

<p>Red comes before green.</p>	<p>Two red blocks must touch.</p>
<p>Green goes before blue.</p>	<p>Blue block is last.</p>

Teacher Resource #4

<p>A red block is first.</p>	<p>Green before blue.</p>
<p>No blocks come after blue.</p>	<p>Only three colors used.</p>

Teacher Resource #5

(For students to create their own pattern description.)

Teacher Resource 6

Template for Pattern Blocks

